UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,708	04/21/2006	Mamoru Tsuruya	289328US2PCT	2093

22850 7590 09/27/2007

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
HANSEN, STUART ALAN	

ART UNIT	PAPER NUMBER
2838	

NOTIFICATION DATE	DELIVERY MODE
09/27/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/576,708	TSURUYA, MAMORU	
	Examiner	Art Unit	
	Stuart Hansen	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/13/2006, 4/21/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Application, 10/576,708, filed April 21st, 2007.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

3. Claims 2, 6, 8, 9, and 11 – 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is indefinite for the use of the term 'loosely coupled' with reference to the relationship of the feedback winding and the primary winding. Two windings are either coupled or they are not coupled, and the coupling factor depends on a variety of system variables; turns ratio, common winding core, leakage inductance, etc. All dependent claims of claim 2 are also held as being indefinite under 35 U.S.C. 112 second paragraph due to the indefinite issues of said parent claim 2.

Said claims 6, 8, 9, 14, 16 and 17 are held to be indefinite because of the use of the terms; setting current, setting value and setting voltage. The specification defines upper and lower settings and the operation of the claimed invention depends greatly on

which of these it is. Therefore, upper or lower setting currents, values or voltages need to be specified to overcome the indefinite issues of said claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996).

Regarding claim 1, Yoshikawa teaches: A boost reactor (Fig 1 [L1]) which receives power from a rectified AC input voltage (Fig 1 [10, 11]) for correcting power factor (Paragraph 20); a main switch which is turned on and off (Fig 1 [Q1]; Paragraph 11); a converting section which turns the input voltage into smooth output DC voltage (Fig 1 [D5, C1]); and a control section (Fig 1 [3]) which controls the main switch to output a specific voltage and controls the switching frequency according to a switch current (Fig 1 [R1, G]; Paragraphs 16 – 19).

With respect to claim 3, Yoshikawa teaches: the control section comprises: an error amplifier (Fig 1 [30 and 31]) amplifying an error between the output voltage (Fig 1 [A form 2]) and a reference voltage (Fig 1 [B]) to generate an error voltage signal (Fig 1 [C']; Paragraph 12); a current detecting section (Fig 1 [R, G, 4 and CP1]) of the main switch; a frequency control section (Fig 1 [34, 35, and CP1]) and a pulse width control

section (Fig 1 [36]) which controls based on the error voltage and the frequency control section and applies the pulse to the main switch.

In regards to claim 10, Yoshikawa teaches: the control section comprises: a current detecting section (Fig 1 [R1, G, 4, CP1]) which detects a current in the main switch; an error amplifier section (Fig 1 [30, 31]) which amplifies an error between the output voltage (Fig 1 [A from 2]) and a first reference voltage (Fig 1 [B]) to generate an error voltage signal (Fig 1 [C']); a current detection amplifying section (Fig 1 [CP1]) which amplifies an error between a voltage which is proportional to the current detected by the current detection section, and a second reference voltage (Fig 1 [F]) to output a voltage amplifying signal (Fig 1 [H]); a voltage varying (Fig 1 [33]) section which outputs a voltage signal (Fig 1 [F]) obtained by varying the voltage amplifying signal of the current detection amplifying section according to a value of the error voltage signal form the error voltage generating section as the second reference voltage (Fig 1 [F]) to the current detection amplifying section (Fig 1 [CP1]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 – 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996) as applied to claim 1

above, and further in view of Hwang (US 2003/0222627 A1, filed 5/21/2002, dated 12/4/2003).

Referring to claim 4, Yoshikawa fails to teach: the control section sets the switching frequency to a lower limit frequency when the current flowing into the main switch is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit.

Hwang though teaches: the control section sets the switching frequency to a lower limit frequency when the current flowing from the rectifier is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit (Paragraphs 38, 81).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

In regards to claim 5, Yoshikawa fails to teach: the control section sets the switching frequency to an upper limit when the current flowing into the main switch is at or above an upper limit, and the control section stops switching operation of the main switch when the current is below a lower limit.

Hwang teaches, however: the control section sets the switching frequency to an upper limit when the current flowing from the rectifier is at or above an upper limit, and the control section stops switching operation of the main switch when the current is below a lower limit (Paragraphs 19, 38, 61, 81; Hwang teaches that the input current can fall to zero which indicates that at low load levels, the switching frequency is 0Hz, or very nearly that, and that the switching is stopped.).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

Regarding claim 6, Yoshikawa fails to teach: the control section sets the switching frequency of the mains switch to a minimum when the current is at or below a limit, and at a maximum when the current is at or above a limit.

Hwang though, teaches: the control section sets the switching frequency to a lower limit frequency when the current flowing into from the rectifier is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit (Paragraphs 38, 81).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

With respect to claim 8, Yoshikawa teaches: the control section reduces the switching frequency of the main switch when the current in the main switch decreases.

Yoshikawa however fails to teach: that the control section reduces the switching frequency when the average current in the main switch decreases to or below a certain value.

Hwang however does teach: the control section reduces the switching frequency of the main switch when an average value of the current flowing from the rectifier is at or below a predetermined value (Paragraphs 12, 19, 38, 61, 81).

Hwang teaches pulse frequency and width modulation, an average current mode technique for normalizing control to sudden surges and sags in current due to load requirements, and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

Referring to claim 9, Yoshikawa fails to teach: the control section stops main switching when an average value of the main switch current is less than or equal to a limit value, and that switching starts again when the output voltage falls to a limit voltage.

Hwang however, teaches: the control section stops main switching when an average value of the rectifier current is less than or equal to a limit value, and that switching starts again when the output voltage falls to a limit voltage (Paragraphs 19, 38, 61, 81; Hwang teaches that the input current can fall to zero which indicates that at low load levels, the switching frequency is 0Hz, or very nearly that, and that the switching is stopped, and it would be obvious that the switching would need to start again as soon as the load demand increases causing the output voltage to fall to a certain limit value.).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of

Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

6. Claims 2, 11 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996) in view of Peron (US 2004/0113596 A1, filed 3/8/2002, dated 6/17/2004).

Regarding claim 2, Yoshikawa teaches: A rectifier and AC power supply (Fig 1 [11, 10]); a control section (Fig 1 [3]) which controls the main switch (Fig 1 [Q1]) to shape an AC power supply current to a sine wave (Paragraph 20; This is performed by any power factor correction (PFC) system, aligning current waveform to a voltage waveform.), controls an output voltage of the smoothing capacitor (Fig 1 [C1]) to a predetermined voltage (as do all voltage converters), and controls a switching frequency of the main switch according to current flowing in the main switch (Fig 1 [G via R1]; Paragraphs 16 – 19).

Yoshikawa fails to teach, however: a boost reactor with primary and loosely coupled feedback winding; a first series circuit from the one rectifier output to the other, and includes the primary winding a first diode and a smoothing capacitor; a second series circuit from the one rectifier output to the other which includes the primary winding, the feedback winding and a main switch; and a second diode connected between a junction of the main switch and the feedback winding and the smoothing capacitor.

Peron, though, does teach: a boost reactor with primary (Fig 5 [L0]) and loosely coupled feedback winding (Fig 5 [L]); a first series circuit from one output (Fig 5 [2]) to the other (Fig 5 [5]), and includes the primary winding (Fig 5 [L0]) a first diode (Fig 5 [DL]) and a smoothing capacitor (Fig 5 [C0]); a second series circuit from one output to the other which includes the primary winding (Fig 5 [L0]), the feedback winding (Fig 5 [L]) and a main switch (Fig 5 [K]); and a second diode (Fig 5 [D1]) connected between a junction of the main switch (Fig 5 [K]) and the feedback winding (Fig 5 [L]) and the smoothing capacitor (Fig 5 [C0]).

Peron and Yoshikawa both teach voltage conversion devices therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the boost reactor with the primary and loosely coupled feedback windings with the feedback diode of Peron in place of the boost reactor of Yoshikawa for the purpose of increasing the overall maximum amount of energy capable of being stored in the system reactance, allowing for higher efficiency and more effective power transfer. Another obvious means would be to have the feedback winding fully coupled to the primary winding, increasing the magnetic coupling ratio and further increasing energy transfer.

With respect to claim 11, Yoshikawa in view of Peron teaches: the control section (Fig 1 [3] of Yoshikawa]) comprises: an error amplifier section (Fig 1 [30, 31]) between the output voltage (Fig 1 [A, 2]) and a reference voltage (Fig 1 [B]) to generate an error voltage; a current detecting section (Fig 1 [R1, G, 4, CP1]) which detects current flowing in the main switch; a frequency control section (Fig 1 [34, 35, and CP1]) and a pulse

width control section (Fig 1 [36]) which controls based on the error voltage and the frequency control section and applies the pulse to the main switch.

In regards to claim 18, Yoshikawa in view of Peron teaches: the control section (Fig 1 [3] of Yoshikawa) comprises: a current detecting section (Fig 1 [R1, G, 4, CP1]) which detects a current in the main switch; an error amplifier section (Fig 1 [30, 31]) which amplifies an error between the output voltage (Fig 1 [A from 2]) and a first reference voltage (Fig 1 [B]) to generate an error voltage signal (Fig 1 [C']); a current detection amplifying section (Fig 1 [CP1]) which amplifies an error between a voltage which is proportional to the current detected by the current detection section, and a second reference voltage (Fig 1 [F]) to output a voltage amplifying signal (Fig 1 [H]); a voltage varying (Fig 1 [33]) section which outputs a voltage signal (Fig 1 [F]) obtained by varying the voltage amplifying signal of the current detection amplifying section according to a value of the error voltage signal form the error voltage generating section as the second reference voltage (Fig 1 [F]) to the current detection amplifying section (Fig 1 [CP1]).

7. Claims 12 – 14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996) in view of Peron (US 2004/0113596, filed 3/8/2002, dated 6/17/2004) as applied to claim 2 above, and further in view of Hwang (US 2003/0222627 A1, filed 5/21/2002, dated 12/4/2003).

Referring to claim 12, Yoshikawa in view of Peron fails to teach: the control section sets the switching frequency to a lower limit frequency when the current flowing into the main switch is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit.

Hwang though teaches: the control section sets the switching frequency to a lower limit frequency when the current flowing from the rectifier is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit (Paragraphs 38, 81).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa in view of Peron has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

In regards to claim 13, Yoshikawa in view of Peron fails to teach: the control section sets the switching frequency to an upper limit when the current flowing into the main switch is at or above an upper limit, and the control section stops switching operation of the main switch when the current is below a lower limit.

Hwang teaches, however: the control section sets the switching frequency to an upper limit when the current flowing from the rectifier is at or above an upper limit, and the control section stops switching operation of the main switch when the current is below a lower limit (Paragraphs 19, 38, 61, 81; Hwang teaches that the input current can fall to zero which indicates that at low load levels, the switching frequency is 0Hz, or very nearly that, and that the switching is stopped.).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa in view of Peron for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

Regarding claim 14, Yoshikawa in view of Peron fails to teach: the control section sets the switching frequency of the mains switch to a minimum when the current is at or below a limit, and at a maximum when the current is at or above a limit.

Hwang though, teaches: the control section sets the switching frequency to a lower limit frequency when the current flowing into from the rectifier is at or below a lower limit current setting; the frequency control section also having an upper limit if the current approaches an upper setting limit (Paragraphs 38, 81).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa in view of Peron for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

With respect to claim 16, Yoshikawa in view of Peron teaches: the control section reduces the switching frequency of the main switch when the current in the main switch decreases.

Yoshikawa in view of Peron however fails to teach: that the control section reduces the switching frequency when the average current in the main switch decreases to or below a certain value.

Hwang however does teach: the control section reduces the switching frequency of the main switch when an average value of the current flowing from the rectifier is at or below a predetermined value (Paragraphs 12, 19, 38, 61, 81).

Hwang teaches pulse frequency and width modulation, an average current mode technique for normalizing control to sudden surges and sags in current due to load requirements, and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor

and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa in view of Peron for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

Referring to claim 17, Yoshikawa in view of Peron fails to teach: the control section stops main switching when an average value of the main switch current is less than or equal to a limit value, and that switching starts again when the output voltage falls to a limit voltage.

Hwang however, teaches: the control section stops main switching when an average value of the rectifier current is less than or equal to a limit value, and that switching starts again when the output voltage falls to a limit voltage (Paragraphs 19, 38, 61, 81; Hwang teaches that the input current can fall to zero which indicates that at low load levels, the switching frequency is 0Hz, or very nearly that, and that the switching is stopped, and it would be obvious that the switching would need to start again as soon as the load demand increases causing the output voltage to fall to a certain limit value.).

Hwang teaches pulse frequency and width modulation and also that the supply circuit which is very similar to that of Yoshikawa has certain limits as to the current of the main switch, the energy stored in the reactor and the frequency at which the switch is operated and how they relate to one another, therefore it would have been obvious to

one of ordinary skill in the art at the time the invention was made to incorporate the frequency modulation techniques, and system current, voltage and frequency limits of Hwang with the system of Yoshikawa in view of Peron for the purpose of better system control and increased system security by protecting system devices with said operating limitations.

8. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996) as applied to claim 1, or alternatively Yoshikawa (JP 08-205539, filed 1/18/1995, dated 8/9/1996) in view of Peron (US 2004/0113596, filed 3/8/2002, dated 6/17/2004) as applied to claim 2 above, and further in view of Chinomi et al. (JP 10-174428, filed 12/9/1996, dated 6/26/1998).

Regarding claims 7 and 15, Yoshikawa and Yoshikawa in view of Peron both fail to teach: that the boost reactor inductance value reduces when the value of the current flowing into the boost reactor is increased.

Chinomi et al. however, teaches: the boost reactor (Fig 1 [2]) inductance value is adjustable according to the load current (Paragraph 33).

Chinomi et al. teaches a conversion circuit similar to that of Yoshikawa and Yoshikawa in view of Peron, also with adjustable switching frequency, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made that the inductance value of the boost reactor of Yoshikawa or Yoshikawa in view of Peron be adjustable according to the load current such as that of Chinomi et al. for the purpose of increasing power transfer efficiency.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart Hansen whose telephone number is (571) 270-1611. The examiner can normally be reached on 8-5:30 Mon - Thurs, every 2nd Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stuart Hansen
September 15, 2007

KARL EASTHOM
SUPERVISORY PATENT EXAMINER